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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,411	11/03/2003	Graham Swift	103-006-CIP	3444
28727	7590	07/15/2004	EXAMINER	
STAMATIOS MYLONAKIS 7009 CASHELL MANOR COURT DERWOOD, MD 20855-1201			BOYKIN, TERRESSA M	
			ART UNIT	PAPER NUMBER

1711

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/698,411

Applicant(s)

SWIFT ET AL.

Examiner

Terressa M. Boykin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-16,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 17-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **Objected Claims**

Claims 2, 3, 4, 17, 18-19 and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by **US 6365706** note cols. 2-6 and claims.

Claims 5 and 6, 7-16, 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by **USPub 20040006198**.

Applicants' claims are directed to a method for preparing a polysuccinimide derivative, which comprises, subjecting the polysuccinimide to a ring-opening reaction.

With regard to applicants' claim 1, note that US 6365706 discloses a method for production of polyasparagine, comprising: reacting polysuccinimide or a derivative thereof, with liquid ammonia, preferably as both solvent and reactant,

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at a temperature and pressure sufficient to cause ring opening ammonolysis of the polysuccinimide or derivative thereof, and the polyasparagine produced thereby, as well as its uses in a wide variety of applications.

With regard to dependent claim 5 wherein said ring-opening reaction is carried out in water, USPub 20040006198 discloses that another useful feature of polysuccinimides is the reactivity of the imide rings to derivatization. Nucleophiles, such as amino compounds, readily form covalent linkages to the polymer backbone via amide bond formation at the carbonyl carbon, by attacking the imide linkage to the imide nitrogen. However, due to the low water solubility and wettability of these compounds, most efforts to produce derivatives of polyaspartate via this route (i.e. derivatization of polysuccinimide, followed by alkaline ring-opening of unreacted succinimide residues) have been conducted in organic solvents such as dimethyl formamide and dichloromethane, in which the polysuccinimide and usually the nucleophilic additives are both soluble. Use of such solvents is costly and also militates against use of the products in many markets, for example personal-care and biomedical markets, in which even traces of organic solvents are not allowable.

With regard to dependent claim 6 wherein said ring-opening reaction is carried out in the presence of an amine, USPub 20040006198 discloses that nucleophilic reagents may be added to the succinimide residues in the copolymer, at a carbonyl carbon, to form linkages to the backbone of the copolymer. Common nucleophiles include, for example, amine, hydroxyl, and thiol groups. For example, amino compounds react with one of the carbonyl carbons of the imide ring to form a side chain amide linkage (as shown below). Alternatively, side chain ester linkages may be formed at the carbonyl carbons in the case of alcohols or other hydroxy-containing compounds, such as carbohydrates or polysaccharides.

With regard to dependent claim 7, 8, 9, and 10, 11, 12 -16 further comprising water as a cosolvent which may be an amine and wherein said combination of amines is comprised of ammonium hydroxide and 2-aminoethanol to form a resin, note that the reference that the derivatization reactions are preferably carried out in an aqueous environment. In this sense, an "aqueous environment" refers to an aqueous suspension or, preferably, a solution, in an aqueous solvent. Preferably, the aqueous solvent is water; however, the term also includes mixtures of water with a cosolvent, preferably a water-miscible cosolvent, such as lower alkyl ketones (e.g. acetone, MEK), alcohols (e.g. methanol, ethanol, propanol, isopropanol, butanol, isobutanol) or ethers (e.g. dioxane, tetrahydrofuran, ethylene glycol dimethyl ether, 2-methoxy ethanol), N-methyl-N-pyrrolidone, sulfolane, dimethyl acetamide, acetonitrile, dimethyl formamide, dimethyl sulfoxide, pyridine, ethyl acetate, or propylene carbonate. If the copolymer is not completely soluble in water, a suspension or emulsion may

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be used. In many cases, the polymer will dissolve as the reaction progresses. The reference further discloses a method of synthesizing an aspartate copolymer, the method comprising: (a) adding to an aqueous slurry of a polysuccinimide, at a pH of about 8-12, a reagent selected from (i) ammonium hydroxide and (ii) a mixture of ammonium hydroxide and a metal hydroxide, effective to produce a product copolymer containing aspartate and asparagine residues etc.

With regard to dependent claim 23 and 24 with regard to the use of stabilizers etc., note that the reference states that stabilizers may be employed therein.

Thus, both of the references above disclose a preparation of polysuccinimide wherein the polysuccinimide undergoes ring opening prepared from the same components as claimed by applicants. Thus in view of the above, There appears to be no significant difference between the reference(s) and that which is claimed by applicant(s). Any differences not specifically mentioned appear to be conventional. Consequently, the claimed invention cannot be deemed as novel and accordingly is unpatentable.

### **Correspondence**

**Please note that the cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants may be referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Terressa Boykin whose telephone

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number is 571 272-1069. The examiner can normally be reached on Monday through Friday from 6:30am to 3:00pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. The general information number for listings of personnel is ( **571-272-1700**).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tmb



Examiner Terressa Boykin  
Primary Examiner  
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